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The JOURNAL of GEOGRAPHY

VOLUME XXX MARCH, 1931 NUMBER 3

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Published by A. J. Nystrom & Co., for The National Council of Geography Teachers
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The JOURNAL *of* GEOGRAPHY

A MAGAZINE FOR SCHOOLS

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The subscription price is $2.50 a year, payable in advance. The price of single copies is 35 cents. Postage is prepaid on subscriptions from the United States, Canal Zone, Republic of Panama, Porto Rico, Cuba, Virgin Islands of the United States, Dominican Republic, Philippines, Guam, Samoan Islands, Hawaii, Mexico, Costa Rica, Guatemala, Nicaragua, Republic of Honduras, Salvador, Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uruguay, Spain and Spanish Colonies. Postage is charged extra for Canada and all other countries in the Postal Union as follows: 27 cents on annual subscriptions (total $2.77), on single copies 3 cents (total 38 cents).

The Journal is the official organ of the National Council of Geography Teachers and is sent to all members of the organization. The annual dues, $2.00, are payable to the *Journal of Geography*. Extra postage rates for copies sent to foreign countries should be added to the membership dues.

Patrons are requested to make all remittances payable to the *Journal of Geography*, in postal or express money orders or bank drafts.

Members and subscribers who wish to continue receiving the *Journal* must send remittances promptly to assure the volume being complete.

Send manuscript and books for notice or review to the *Editor*.
Send orders for back numbers to *Journal of Geography*.

Published monthly except June, July and August

PUBLICATION OFFICES: 450-454 AHNAIP STREET, MENASHA, WISCONSIN

Business Correspondence, Membership Dues, and Subscriptions may be sent to Publication office or to

A. J. NYSTROM AND COMPANY
PUBLISHERS, JOURNAL OF GEOGRAPHY
3333 ELSTON AVENUE, CHICAGO

Entered as second-class matter January 15, 1919, at the post office of Menasha, Wisconsin, under the Act of March 3, 1879.

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VOLUME XXX MARCH, 1931 NUMBER 3

"QUEEN CITY OF THE LAKES": A GEOGRAPHIC PAGEANT

HAROLD S. KEMP
Harvard University

A 19TH CENTURY GEOGRAPHER APPRAISES A WILDERNESS

In 1810, when Cooperstown, New York, was one of the larger towns on our "western" frontier, and the men of the old settlements along the sea-board had begun to dream of an empire beyond the barrier of the Alleghenies, a land company asked Judge Cooper, successful in his own colonization venture, to make a reconnaissance or them in western New York.

This company was not a philanthropic one. It foresaw the ultimate growth of cities farther inland than Cooper's town, well up in the Indian country. Not, to be sure, such metropolitan centers as the busy ports of the coast, but trading towns where land values would surely rise as the agricultural country about them was taken up and made to produce. They foresaw towns where grain might be ground; cured meat and leather might be gathered together for shipment to New York; and where the successful farmer might find on sale the manufactured goods of the older east—furniture and implements chiefly, and such exotic luxuries as tea or sugar.

Judge Cooper went on his quest less as a real estate appraiser than as a geographer, bent on studying the resources of western New York. And he proved himself a good geographer, in spite of his limited vision as to what would constitute the needs of a city a hundred years hence. His would have been a rare vision indeed had it foreseen, in 1810, the present-day demands of manufacturing, transportation, trade and social organization.

What were the preeminent resources of Cooper's frontier? Water, farm land, timber and wild animal life comprised his list, and it was his task to find these four, not singly, but in combina-

tion so favorable as to justify that early American land company in laying out a town square and streets in the far wilderness, confident of a coming population.

Today the stream which runs thru every midwestern town is appreciated as the nucleus of a park, the seat of the swimming hole, the unfortunate reason for expensive bridges and annoying spring floods, and possibly the convenient receptacle for the town sewage. In Cooper's day a water site had other meanings. It meant relationship to trails or wagon roads which found their easiest way up the valleys; to drinking water; to water transportation in the days when one's entire fortune might comprise a canoe-load; and finally, to power. Little power was needed to turn a grist mill and locate a town: today, with the centralization of milling, that little power, still available in all those old towns, is as negative a resource as are the vanished forests and the extinct animal life which, with power, figure so importantly in Cooper's report and the development which followed it.

In the ideal environmental complex of Cooper's day, agricultural land was accepted almost without thought as the prime requisite: how important was the water element in that complex is seen in his final list of eight sites suitable for profitable development in what is now agricultural western New York. Four of the sites were at small falls—the largest ones to be found in fairly level country. One was on a strait connecting two lakes, hence the passing-place of all water-borne traffic—almost exactly the type of site which located ancient Troy. Another was at the head of navigation on a small stream where the necessary portage would focus land and water trails. A seventh was at the mouth of a small stream running into Lake Ontario, where it furnished a tiny harbor and the outlet of inland water-routes. The last was at the mouth of a still smaller creek emptying into Lake Erie at its eastern end.

That Cooper saw well for the purposes of his time is to be read in the map of New York State today, whereon one finds a town at each of these eight sites. That he must have dreamed—standing there in the stillness of the wilderness at the end of Lake Erie—of the needs of future cities; or felt the power of still other, latent, resources, appears in his final report. For when, his arduous journey ended, he found himself safe at home in Cooperstown and editing his observations, he set down as his chief conclusion: "The

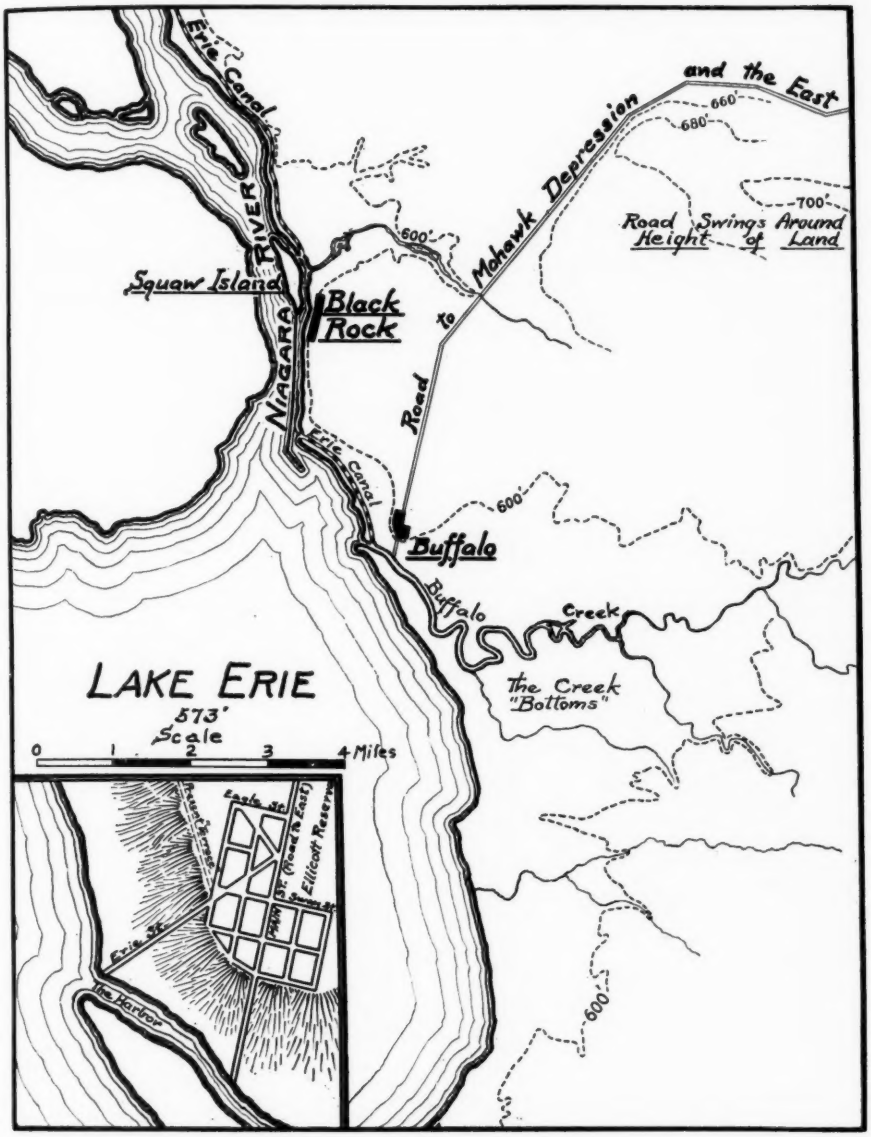

FIG. 1. The Buffalo-Black Rock Area at the Opening of the Erie Canal. Each village has a small natural harbor, and both have in common the Erie Canal, as they have had previously the road to the East.

INSET. Earliest Plan of Buffalo (1813). The Mohawk Road terminates at Buffalo Creek and Buffalo is astride the road (as Main Street) at the top of the bluff above the creek. Accompanying photographs show the present heart of Buffalo to coincide exactly with this original settlement.

situation most conspicuously advantageous is the mouth of the Buffalo creek on Lake Erie."

In favoring this site above the others, Cooper tacitly recognized as a fifth resource, location. Not mere location on a little power-site, near tillable land, within hauling distance of wood for fuel and building and within range of larder-supplying game; but location in reference to remote resources and the remote groups of people centered about those resources. Today, when one lists "location" as a resource, he is using the word in so broad a fashion as to mean "location in reference to the rest of the world." For years after the land company accepted Cooper's recommendation and Buffalo had become a thriving little center, it was the recognition of this factor of favorable location that gave the townspeople heart; made them accept the sad fact that the mouth of a stream is a poor place for water-power, and resign themselves to carrying their grain eleven miles back into the hills to the nearest mill.

It is not to be doubted that some settlers, in choosing between the eight outstanding sites in western New York, rejected Buffalo because of its lack of power, and thus destined their descendants to undistinguished life in some little town which quickly reached its maximum growth. Others saw the increasing trend of travel to even farther western regions; noted how much of that travel, in seeking the shortest and best route to the easy carriage of the Great Lakes, aimed for Buffalo; and let those who would go on to cope with the wilderness while they remained at the end of the lake, as townsfolk, secure in the knowledge that so much passing travel meant business today and promised even more in the day when produce should begin to flow back to feed the seaboard cities.

And so Buffalo was founded upon the four frontier resources, its relationship to that of water being, not a matter of power, but of a harbor; and a harbor at the end of a long portage. Buffalo, with more power available today than it can use, even in these times of monstrous industrial development, was one of the few frontier towns which could have no gristmill of its own!

Let it be remembered that it saw itself as lacking nothing else. Granting the inconvenience of hauling its grain to a nearby town, Buffalo spent no time bemoaning the lack of power. Few of the manufactured articles of today were known at the time, and most of those few were thought of, not as "manufactures" but as home industries. Civic spirit saw trade, not manufacturing, as its chief

asset, and trade consisted chiefly of the movement of food-stuffs. Buffalo thought of the prosperous cities growing steadily at or beyond the eastward end of its long portage, and was content with its own prospects as a commercial center.

FRONTIER RESOURCES OFTEN PROVE TRANSITORY

Forests waned, game disappeared. Thus in a few years two of the foundation resources were negligible in the case of Buffalo. Local farm land became less potent as a resource than in other

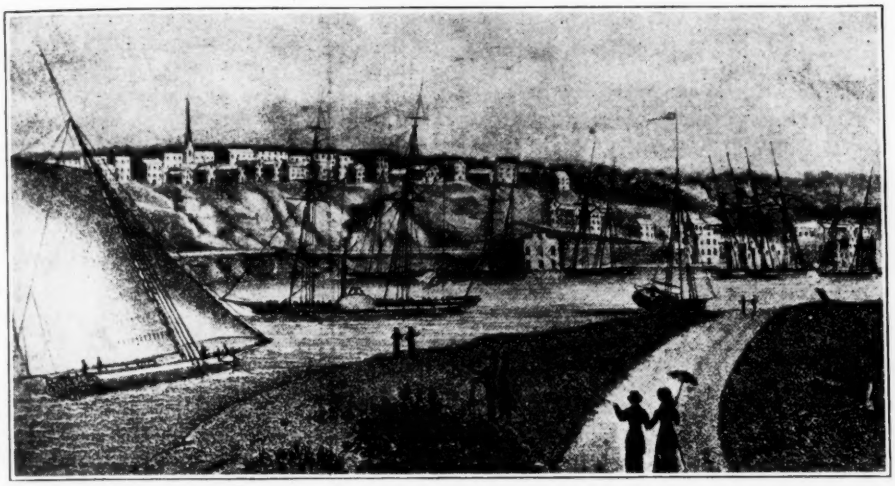

FIG. 2. An Old Drawing: "Buffalo Harbor in 1825." The view is taken from the south bank of the creek near the tip of the peninsula (See Fig. 1, inset), and shows the village in a clearing on the bluff. The lower end of Main Street is seen descending the slope at the right, where a cluster of warehouses marks its juncture with the creek. From *The New York Canal "Memoir," 1825*

places, since a flood of produce, enormous for its time, was soon pouring into the city from Ohio, and it was the farmers of the rapidly expanding Ohio region that furnished a vastly greater market for farm implements than did the scant population which immediately surrounded the warehouses and shops of Buffalo.

Even the fourth of Buffalo's primary resources threatened to fail it. Its harbor was a tiny one—no more, indeed, than the mouth of a small creek. Moreover, sandbars were constantly forming across the mouth of the creek, and as sailing craft took possession of Lake Erie, captains tired of finding themselves aground every time they tried to approach Buffalo's landing-place. In fact, they

presently sailed past the promising little town and found a bar-free harbor two miles to the north, behind an island well within the Niagara River.

The fate of Buffalo hung in the balance. Meetings were held, speeches made, organizations formed. The hamlet of Black Rock, with its more open harbor, threatened to relegate Buffalo to the category of inconsequential, static villages, left behind in the march of progress.

Black Rock grew apace. It built a wharf. It boasted a ship yard. The first steamboat on Lake Erie, now historic, was built by the booming rival of despairing Buffalo. Flour, wheat, corn, wool and dairy products poured into the upstart's warehouses from Ohio; freight handlers were busy and well paid; inns bustled with settlers, western bound; merchants sold to colonists who had traveled light across the State but now, with easy water travel ahead and no more stores, must outfit themselves for the great undertaking. In 1820, the Black Rock Chamber of Commerce, had there been one, would have assured an investigator that its prosperity was unassailable; in Buffalo, only the Fourth-of-July orator dared a specious hope that that village might ultimately be more than a dim statellite of its thriving rival.

But civic spirit, generally closely associated with the individual pocket-book, was not dead in Buffalo. There was the natural feeling, so characteristic of civic confidence, that if Buffalo's harbor, second naturally to Black Rock's in accessibility, be artificially made its equal, the older village might at least hope for a fair share of trade. There is something very significant about this undertaking, the opening of the harbor, in 1820, and the building of a pier. The workers in the wilderness were no longer willing to accept what they had found; instead of merely using, they undertook to change —to improve—their environment.

By 1825 then, both Black Rock and Buffalo offered a haven to ships laden from the west; a loading place for ships receiving passengers and merchandise from the east. Heads were wagging in both places. Feeling ran high. The east had recognized, long since, the unique character of Lake Erie's eastern tip as a focal place in the western expansion, and a state-built canal was cutting its way from the Hudson toward that focus. Black Rock citizens saw no reason why the canal should be continued farther than their harbor, where canal barges might be loaded directly from lake

vessels. Buffalo pointed with pride to the magnificent new harbor, built by public subscription after a "whirlwind" civic campaign (it cost a little over one thousand dollars!) and contended that the canal should be extended two miles to give them a share of its patronage.

CAN MUNICIPALITIES LIFT THEMSELVES BY THEIR BOOT-STRAPS?

There is only one great city today at the eastern tip of Lake Erie. Inquirers for Black Rock find that it was long ago lost in the expanding maze of its rival. If the name survives it is as that of Greenwich Village lives on in downtown New York.

Was civic pride and initiative lacking in Black Rock? Was Buffalo a winner in a battle of speeches and subscription blanks? Did Buffalo have a better "pull" with the legislature? Was there a Napoleonic spirit in one of those early merchants of the "Queen City of the Lakes" which drove Buffalo to the front and by sheer strategy threw Black Rock hopelessly into the rear? Or was Judge Cooper right? Was the mouth of Buffalo Creek more "conspicuously advantageous" than the lee of Squaw Island off Black Rock? In short, was it something in the environment itself—the old, long-awaiting stage for man's entrance into the Great Lakes Basin—which lifted Buffalo out of the hands of its squabbling, striving, speech-making and self-seeking citizens' committees and made it worthy of the grandiloquent name they had given it? There were only 2,412 people in the village in 1825; seven years later Buffalo became, with its population of 10,119, a city—the city already destined to submerge and obliterate the static little canal and lake-port of Black Rock which had seemed so formidable and equally-endowed a rival. What was it that did the trick for civic spirit, which, alone, could have done no more than strive and submit, as indeed, it had to do in unlucky Black Rock!

It is still the matter of location—this time a refinement of location, since the two miles which separated the two villages are of little moment in themselves. The map tells the story. One must find within those two miles the something which again turned ships into Buffalo's harbor and which drew canal barges past the loading platforms of Black Rock for the laborious seeking of further ones.

Not laborious alone, but expensive. To haul a cargo, divided between many small canal barges, along the tortuous route from Buffalo to Black Rock, tied up men and capital far longer than it

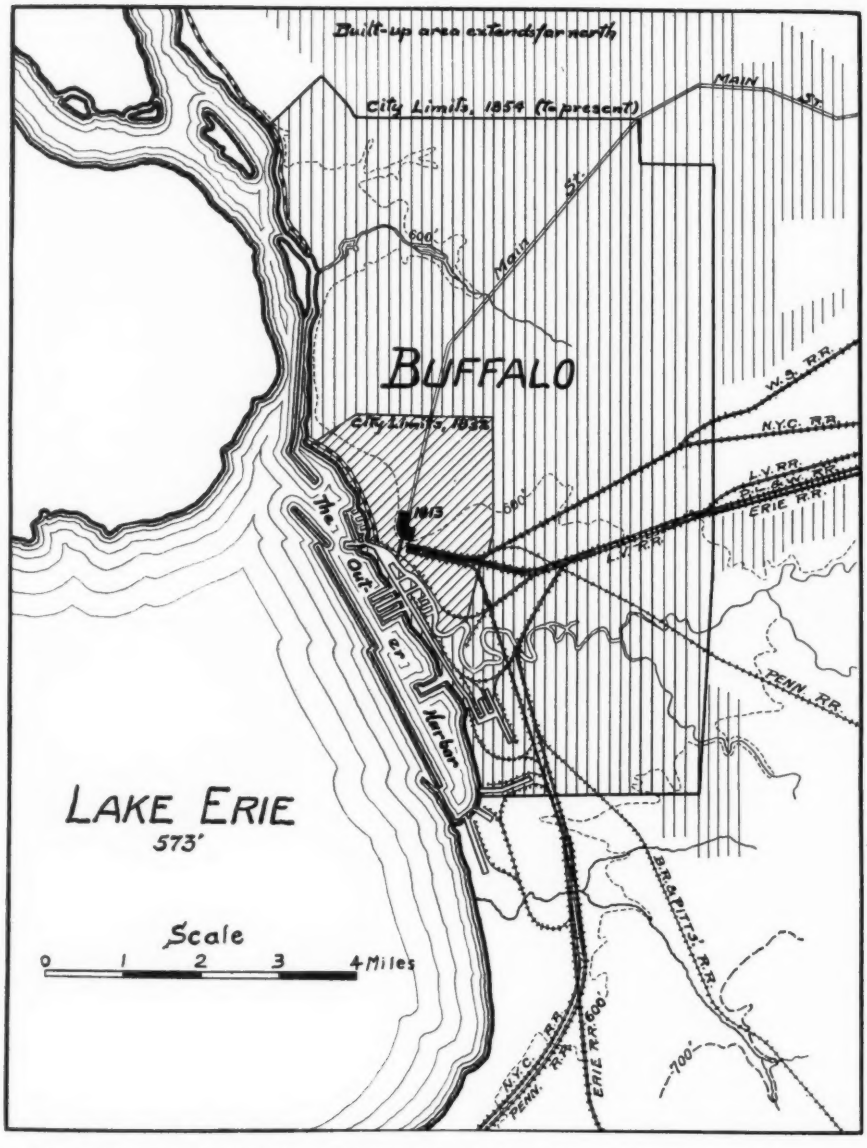

FIG. 3. Present-day Buffalo. The Barriers of river, river bottomland, and consequent slips, railroads, and railroad yards, have combined with the terrace to make Buffalo's greatest growth to the north and northeast of the city's nucleus.

took the cargo-bearing ship to sail past the newly opened harbor and deliver to waiting barges at Black Rock. Citizens of that place played up this fact, and branded the extra two miles of canal as waste of public funds. However, the legislature felt, perhaps, that

Buffalo deserved that little waste, and gave it the extension it demanded. Captains had their choice of favoring one harbor or the other.

And captains went more and more into Buffalo harbor. Sailing vessels found it easier to turn into the roomy basin on the lake shore than to beat their way into the Niagara River and back of Squaw Island. A boat or two got out of control and was carried away in the swift current near the falls. The snug harbor of Black Rock proved too snug altogether as shipping increased, whereas there was ample room for additional basins along the lake shore at Buffalo. Black Rock, fighting against the increasingly apparent handicaps of its environment—handicaps which scarcely appeared while affairs were conducted on a small scale, but which became all too significant with the growth of trade—found another factor in its favor in water power, and by erecting a flour mill, drew wheat cargoes to its wharf: the first cargo from the far new wheat-shipping port of Chicago came not to Buffalo, but to Black Rock, opening an era which still persists in the transportation and milling of western grain.

But the bulk of the wheat still went down the Erie canal as grain, and so more than ever found its way into the better harbor of Buffalo. Capital was prompt to see the drift of affairs—the ultimate triumph of the Buffalo environment—and money poured in. The harbor was enlarged and improved; a lighthouse was built; the first elevator was set up. To the mixed farm products of Ohio were added by leaps and bounds the grain of an army of farmers who had finally invaded Illinois and Wisconsin. And as word of their crops traveled eastward to the coast, fresh regiments of eager farmers, first from New England's stony hills and then from far-off Germany and Scandinavia, swarmed westward to settle on the productive prairies. Buffalo teemed with travelers; merchants and inn-keepers throve; there was work for all, and there were return cargoes of families and household effects for the ships that had brought grain from the west. As one of Buffalo's orators put it in 1845, "A commerce, fertilizing as the Nile and which can never be diverted, warrants and confirms our most exalted hopes."

And so, secure at the eastern end of lake traffic, Buffalo found itself a veritable phenomenon among commercial cities, and saw, with every boatload of colonists bound for the exhaustless western plains, new promise of the trade that was to pour itself into its

encompassing arms. One of its local prophets in 1825 had celebrated the opening of the Erie canal with this vision: "Ohio surplus products will be wafted to this place and bartered for other commodities or reshipped on board Canal Boats [the capitals are his] for an eastern market . . . . and there can be little doubt that upon the extent and profits of this commerce is based the future prosperity and opulence of this village." It is unique among civic forecasts, in that it understates the possibilities. The orator's mind had not yet grasped the multifold development that was to go on far to the west of the new farming country in Ohio.

Robert Fulton, of steamboat fame, in a letter to Gouverneur Morris in 1814, had let his imagination cover a wider area and had dared to be more explicit in his prediction as to what territory the Buffalo of the future—of today, in fact—might claim as tributary to its trade. He foresaw the time when farming would "extend back from the shores of all the Great Lakes a hundred miles" (limiting his estimate by the distance it would pay to *cart* produce to lake vessels!) and his mathematical mind produced, as an estimate of this future Great Lakes territory, the figure "49,200,000 acres." Based on this figure he gave his pronouncement as to the population Buffalo eventually would serve and thrive upon. "There can be no doubt," he wrote, "that the time will come when the population in the countries here indicated will be one to every ten acres, or 4,920,000 persons"! The enormity of the figure seemed fantastic at the time. Today, with Chicago alone boasting three and a half million people, the prediction of 1814 stands as a model of civic conservatism.

If Buffalo's acknowledged security had indeed been complete; if in truth, its commerce could "never be diverted"; the trade with the modern development in the northwest would have made it a veritable Behemoth among commercial cities. But no one of its early prophets seems to have foreseen anything but farming in the states tributary to the lakes. They had no conception of western cities, greater than anything America then knew, springing up to consume much of the produce of the farms and thus curtailing the eastward flow of produce thru Buffalo. They recked little of the railroads which were to compete with their marvelous canal. They counted not on the day when there would be less primitive ways to ship produce than to haul it a hundred miles by wagon over frontier roads to be loaded into Buffalo-bound vessels. Surely, not Buffalo's

faintest-hearted booster guessed that by 1850 they who had organized to secure the new canal would be organizing again to combat the abandonment of the "old" canal which the "new" railroad already had made to appear antiquated. In that same year, water carriage, via the network of canals which had tied Lake Michigan to the Mississippi, and Lake Erie to the Ohio, had brought hemp into Buffalo from Kentucky; furs from Missouri and its far-western

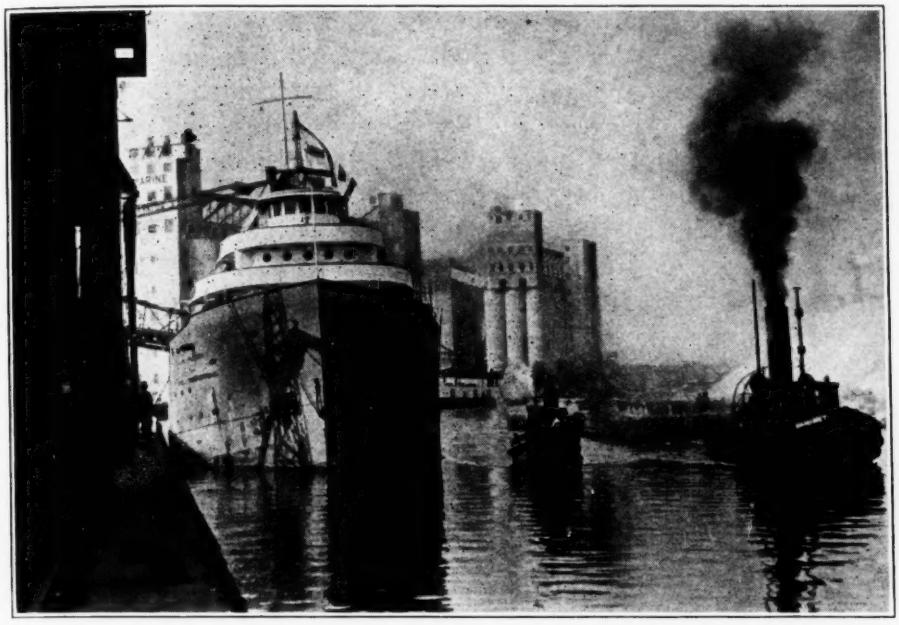

FIG. 4. Buffalo Creek, Widened and Dredged. With the addition of many slips, easily dug in the alluvium of the creek bottoms, it forms the modern "Inner Harbor" of Buffalo; while the same bottoms afford roomy meeting place for rail and water transport. *Courtesy of Buffalo Chamber of Commerce*

hinterland; cotton from Tennessee and Mississippi, and sugar from Louisiana, all following the barge routes which led thru Buffalo and down the Erie Canal to New York and its neighboring cities. Morris' hundred-mile hinterland of the Great Lakes had already stretched to the Gulf and the Rockies! But the era of canal-boats as the most favored means of transportation was swiftly passing. Thruout the western states a network of rails was replacing the web of canals which pointed to the Great Lakes and Buffalo. Waterways had served the frontier well, but briefly. A new era had begun.

The very element in Buffalo's environment which had been its

making threatened to be its undoing and to add it to the towns whose resources were adequate only for a passing phase of the general development—a single tableau in the geographic pageant.

Buffalo's preeminence had been due not alone to its location at the eastern end of Lake Erie, but to its equally significant location at the western end of the only real break in the mountain system which lay as a barrier between the settled seacoast and the expanding west—a break graded to the successive uses of Indian trail, wagon road, canal, railroad and auto highway.

Trail, road and canal carried trade to Buffalo, as did the new railroad which connected the east with the Lakes. But the railroad could not be checked in its westward march, and all too soon the merchants of Buffalo saw that trade might be less frequently "wafted over the billow" to its marts than shunted thru its railroad yards with local profit to no more than a few switchmen. Innkeepers saw travelers "wafted" past their doors instead of waiting for a sailing. Merchants looked in vain for the outfitters who now could carry their household goods from their old homes to their new ones.

Two interesting developments followed. There was, during the fifties, a distinct dwindling of commercial talk; of boasting of trade supremacy and predictions of trade expansion. And there began, in its place, a great scurrying about on the part of the hitherto satisfied burghers in search of *something new in Buffalo's environment*—some unappreciated, undeveloped resource with which it might maintain the prosperity which had been so great and which threatened to become so much a thing of the past.

A New Stage-Set Is Demanded: New Characters Enter the Scene

"Organization" again became the watchword. Men asked one another what other cities, whose advantages for trade had been less striking than Buffalo's, had thrived upon. It needed no Moses to open the way. "Manufacturing" was soon on every tongue, and it was not long before the very voice which had furnished that comforting phrase, "Commerce, fertilizing as the Nile," was proclaiming of Buffalo, "Manufactures are rising in its bosom"! Indeed, it was inevitable that there should have been some few manufactures in its bosom for years. The need for castings in ship building had located a small foundry in Buffalo as early as 1825, and the demand

of all the agricultural west for plows increased the business, based on pig iron from the east. Overlooked by the frontiersman, Cooper, but waiting since glacial times, were well-assorted deposits of sand, suitable for the moulder's use, as well as beds of clay which encouraged brick-making. Hides from the west had here met hemlock bark from the hills to the south of town, and leather tanning had

FIG. 5. Airplane view of the Mouth of Buffalo Creek. Some of the slips and elevators of the Inner Harbor are shown. *Courtesy of the Buffalo Chamber of Commerce*

been started (as indeed it was starting in many a smaller western town) for local use.

Castings and leather reflected a favorable location midway between remote markets and raw materials. Brick reflected a local need and the utilization of another resource hitherto uncounted.

But what of still other resources, as yet neglected? The cry for manufactures set the people to listing the resources of other cities—to thinking, probably for the first time, just what they themselves might lack. And they found enough to give them pause—or to stir them again to united action.

They lacked water power! With the continent's greatest waterfall twenty miles away, they had to admit that they themselves lacked the power to turn a single wheel.

They lacked a large local supply of every vegetable material which might set factories to running; cotton, hemp, flax, grain, all came from a distance. Even lumber had long been coming from the west by boat.

They lacked, and most deplorably, minerals. Their iron came from the far side of the mountains, and reached them only by grace of their own providential break in those mountains. Of local ores there were none.

And then, came the most disheartening discovery of all. Manufactures meant, above everything else, a favorable relation to fuel, and coal was wanting. What little they had used theretofore had come, like pig-iron, by canal from the east. It was quite evident that a great manufacturing city would never grow on so distant a supply of this bulky commodity.

The demand discovered the supply. Eighty miles away, in the hills to the south, was coal, and the shout went up for another railroad to bring it over the easy down-grade to Buffalo. Iron was discovered in the meantime near Marquette, on Lake Superior, farther away than the eastern supply, but more cheaply brought east by Lake than west by canal or rail. Moreover, the great supply, its easy accessibility and the cheapness of western labor made this new find a treasure for Buffalo, where the ore could be landed within a short rail-haul of the coal which was quite lacking in the iron country. And so, with location still its best resource, Buffalo found itself the meeting-place of iron and coal and set up two blast furnaces, profiting from the same principle that locates iron and steel works at Cleveland, Pittsburgh, and a dozen Ohio and Pennsylvania cities on the line between those two—the line between coal and iron.

Organization had been justified. Environment had met civic spirit half way. New resources had not been lacking, but only awaiting recognition and development. Buffalo slapped itself on the back and went on. The *Daily Courier* carried advertisements sponsored by the "Association for the Encouragement of Manufactures in the City of Buffalo." The same paper printed editorials stating that the city was "admittedly" the best lighted, paved, watered and sewered city in the United States; its prosperity as a commercial city had well served in dressing it up for its industrial age—in making it attractive to the manufacturing population it hoped to gain.

Indeed, some of the commodities which had made its commercial success, persisted as the basis for manufacturing as well. Wheat, too bulky to abandon water transportation, poured into its elevators, the first of which, with a capacity of 60,000 bushels, had been built in 1843. Three years earlier than that it had welcomed with much excitement the first full cargo of wheat from Chicago—a

FIG. 6. Modern View of Buffalo's Earliest Harbor, just inside the mouth of Buffalo Creek. Taken from the air, approximately over the spot from which Figure 2 was drawn. Main Street is again seen, reaching the river at the right, and Buffalo's skyscraper district coincides strikingly with the original village plan (Fig. 1, Inset). *Courtesy of the Buffalo Chamber of Commerce*

cargo of only three thousand bushels. By 1860 it had twenty-four elevators, with a capacity of five million bushels and yearly receipts of seventy million. Wheat in Buffalo's industrial age meant not only trade, but flour mills—manufacturing.

Cattle, bulky like grain in proportion to value, came from the west as far as possible by boat and then, to avoid the slow-moving and weight-losing trip by canal or the expensive one by rail, were

slaughtered in Buffalo for the cities of the east—meat-packing was added to its industries, and still more hides were turned over to the local tanners.

But it was the lake-brought iron which gave the widest range to incoming factories. For its supply of local steel became the basis for many manufactures. Its old plow business, simply started for the early Ohio farmers, grew with the market and its blast furnaces. In bulky manufactures for the expanding west it had an advantage over the manufacturing cities of the seaboard: it led the country in the designing and production of agricultural implements.

Location had triumphed again! Buffalo, the eastern outpost of the farming west was now also the western extension of the manufacturing east. Having thriven as a trading city on the tolls which it exacted on eastward-moving foods, it now prospered as the manufacturing city which lay nearer to the western markets than any of the older manufacturing centers.

Years passed, and then, in spite of its location between water and land routes, a new menace arose. The growing population to the west had begun to see itself as doing its own manufacturing. Chicago, nearer the wheat fields, became the agricultural implement maker for the west as it now is for the world. The day was coming, with refrigerated transportation, when Chicago, a long water-journey nearer the fattened cattle of the corn belt, would usurp the best location between supply and demand in the matter of meat. Pittsburgh, with something unique in its own environment—its own relation to resources—became the steel center and waxed rich and famous.

Can A City Outlive Its Environment?

A third era was ending. Again Buffalo's prosperity—this time based on specialized manufactures—threatened to become a mere phase, a casualty to the developing west. The Queen City of the Lakes no longer lay between a manufacturing east and a purely farming west. The tide of manufacture had swept westward over it, and instead of being a westward outlier of industry, set snugly next to a great and growing market, it found itself in the very middle of the industrial region, with rivals far to the west and in the very heart of that rich market.

Its position seemed less significant than before. The resource of location which had carried it triumphantly thru three phases of

its growth seemed to have lost much of its force. Again citizens began to look about for another resource—still another neglected element of its immediate environment. And of course, they "organized" again. (There are those who think the "I will" civic spirit is a product of our own times. The story of Buffalo takes it back more than a century.)

And at last, Buffalo discovered Niagara!

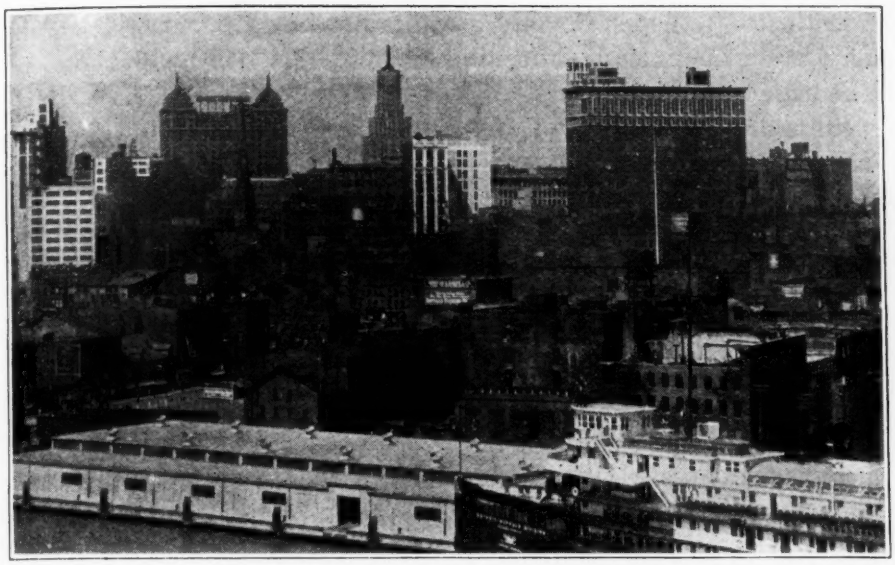

FIG. 7. View from the Inner Harbor, Near Its Entrance. Old waterfront buildings extend back to the base of the bluff, while modern structures mark the original site of Buffalo Village. *Courtesy of the Buffalo Chamber of Commerce.*

Here, if it could only be used, was a resource unique thruout the world—unlimited power, not lost in the jungles of Africa or the mazes of South America like Victoria and Iguazu, but at the very doors of a manufacturing city in a country of abounding wealth. And so, in 1886, one is not surprised to find Buffalo citizens offering a reward of $100,000 for a plan to harness Niagara.

In 1901 Buffalo called its world's fair the Pan-American Exposition, but whatever it was called, it was the expression of Buffalo's renewed triumph. Ten years after its call for help, Niagara power had been delivered in the city which, in its early days, had sent its wheat away because it "had no power." Buffalo was still securely set at the end of Lake Erie—so choicely set, indeed, that Canadian

wheat now added itself by the million bushels to that of our own west in the elevators which marked the end of Lake Erie and the "low road" to sea thru the mountains. But its location had become freshly significant, for manufactories go to power, where that power is not too remote from the market, and Buffalo, having, at last, the power, was central to an unequalled market.

Significant as is water-power in Buffalo today, it is no more than an item in the environmental complex—the group of natural phenomena—to which the city owes its present prosperity. It was the slow development of its other resources which made it ready to utilize its own great share of Niagara's power. That that power is carried to it instead of developing a great rival at the very Falls, is due to its established position in the world. A focus for land and water routes ever since Cooper's day, it now has the transportation facilities, capital, labor supply and civic organization which modern industry demand; hydroelectric power today can go to Buffalo, and Buffalo, secure in its unique site—the site that had been shaping for it since time began—is in a position to take of that power as it will.

The latest United States census tells the story of Buffalo plus a harnessed Niagara. The town which organized in 1860 "for the Encouragement of Manufacturers," turned out manufactured products in 1927 valued at $649,301,599! Its old relation to east and west is still plainly seen in the detailed figures, for flour ($83,673,997) and other grain products lead with $108,648,767; the modern development of farm vehicles and implements—motor vehicles—is second, with $77,825,868; slaughtering and packing is third, with $45,854,706; blast furnaces and rolling mills, fourth, produce annually to the value of $31,312,687, and foundries and machine-shop production (Buffalo's first industry) comes next, today, with $29,849,540.

But Buffalo's growth from the old days when grain, beef and ore from the west meant well-nigh everything to it, is best seen in the figure which remains—the figure which reflects its newer relation to market and power;—

"All other industries.....$293,491,568"

Buffalo, the expression of an environment, had reason to celebrate—has reason to rejoice in—the utilization of its last, long-neglected resource.

Or is it, perhaps, not the last?

ENGLAND *

C. B. FAWCETT
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More than half the people of the New World speak the English language, and derive with it from England much of the traditions, social ideals, laws and modes of thought which constitute their social heritage—one of the two great factors in their development, the other being their own geographical environment. Hence, particularly here in New England, it seems appropriate for an English geographer—whom you have honored by an invitation to address you—to say something of the geographical environment in which our common social heritage was cradled and in which it grew to the stage of maturity and strength which enabled it to spread so widely over the modern world. This expansion is one of the greatest facts in the world of today; it has made England the Mother Country of the greatest aggregate of nations that have ever shared one body of social ideals and habits.

WHERE IS ENGLAND?

The first question in geography is "Where is it?" So we start by asking "Where is England?"

It is that part of the island of Great Britain which lies nearest to the Continent, the southeastern lowland of the British Isles, themselves a group of islands on the continental shelf off the northwestern corner of the Old World land mass. It lies in comparatively high latitudes, wholly to the north of 50° N.; and before the Age of Discovery it was merely an outlying fragment of the World of Civilization, far away from the great centers of light and leading. Now the exploration of the world has placed it near the center of the land hemisphere and at one of the greatest focal regions of world routes. But it is still just within the northern fringe of the habitable world. To the north it has only the North Polar Seas; to the east and southeast beyond the narrow seas there is the Continent; to west and southwest lies the ocean—no longer a barrier but an open way.

* Address given at the Annual Dinner of the National Council of Geography Teachers, Clark University, Worcester, Mass., December 27, 1930.

WHAT IS ENGLAND?

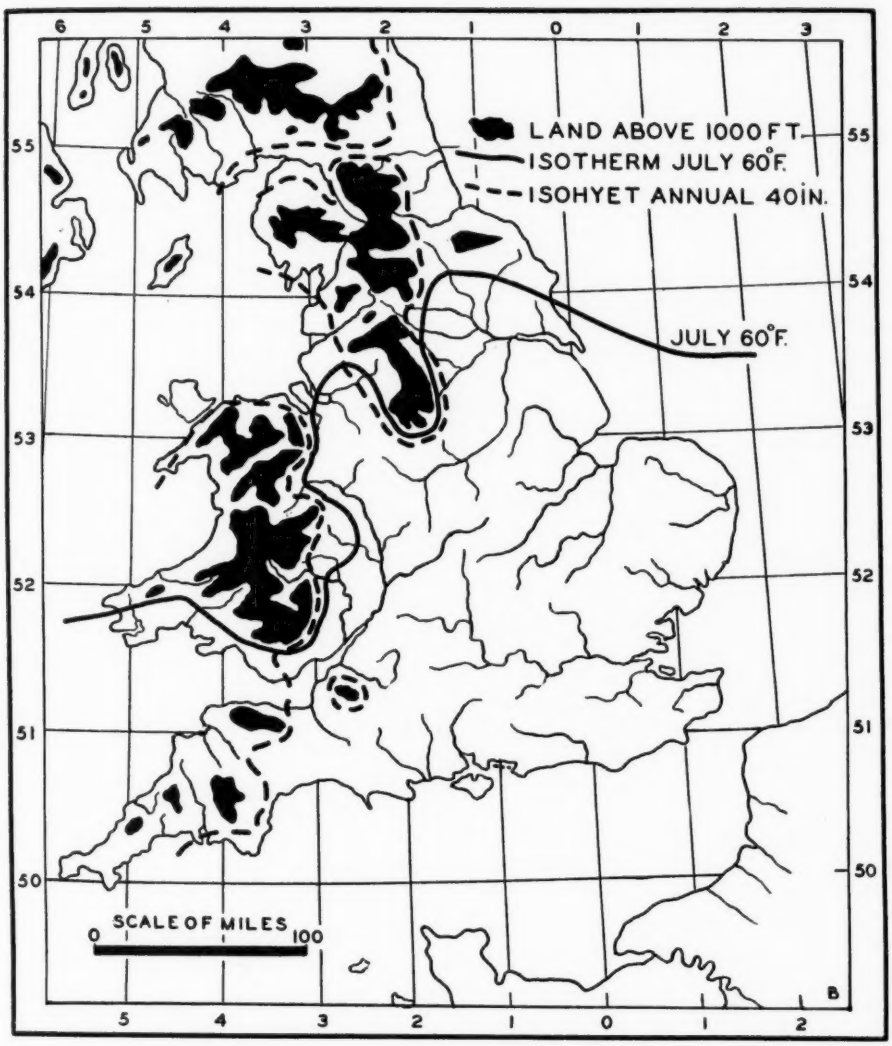
To the geographer it is essentially the lowland which forms the southeastern third of the island of Great Britain, clearly marked off by its frontiers of sea and highland—the "Narrow Seas" which sunder it from Europe, and the Highlands which fill up most of the western and northern parts of Great Britain. Two small parts of these highlands, the southwestern group in Devon and Cornwall and that half of the Central Highlands which lies south of the Cheviots, are historically and politically parts of England. But they are only minor additions to the Lowland which is, and has been for more than a thousand years, the essential England. This is the region in which a number of immigrant peoples, settled there from the fourth to the eleventh centuries of the Christian Era, have been moulded into the English nation, influenced at every step by the geographical environment which enfolded them and to which their life had to be adjusted.

The greater part of this English Lowland is included in a compact and nearly rectangular area between latitudes 50° to 53° N. and between longitudes 3° W. to 2° E.; but to the north it is extended nearly a hundred miles farther, on both sides of the Pennine Highland, by northeastern and northwestern sections which are respectively Yorkshire and Lancashire. England is a small country, only some 50,000 square miles in area, of which the lowland occupies about three-fourths. This English Lowland is thus less than one three-hundredth part of the total area of the British Empire, and about one-eightieth of that of the Continental United States. Can geographers contribute anything to explain the greatness of the share of this little England in the making of the modern world?

CLIMATE

England lies in high latitudes, and in a region of wet maritime climate. Here the maximum upward limit of agriculture is rather below than above a thousand feet above sea level. Taking the thousand-foot contour line as marking the limits of the lowland, we see that the English Lowland occupies the whole Southeastern section of the island, from the edge of the Welsh and Devon Highlands to the east coast. It extends northwards from the south coast, for almost exactly half the length of great Britain, to the place where the Central Highlands expand east and west to the

seas in North Yorkshire and in Cumberland, so as to leave only narrow lowland passages towards the north. It extends to the west coast in two areas, south and north of the Welsh Highland, reaching the shores of the Bristol Channel and the Irish Sea, and so



separating the several highlands of the southern half of Great Britain from each other—a separation which has had important results in history.

These limits formed by the highlands are very closely paralleled by those fixed by climatic conditions. The July surface isotherm of

60° F. almost exactly outlines the English Lowlands to the north and west, tho not to the southwest. It marks to the north the limits of the profitable growth of wheat, except on small and specially favored sites; so that it can be said for the eastern side of the island that "south of York the growing of wheat is a good gamble, north of York, it is a bad gamble."

The Lowland is outlined a second time by the forty-inch annual isohyet—again with one break, this time to the northeast. Over nearly all the highlands of Great Britain the annual rainfall exceeds 40 inches, and in many places it is more than double that quantity; while hardly anywhere on the English Lowland does the normal annual rainfall reach 40 inches; tho it is everywhere more than 20 inches, and so is amply sufficient for agriculture in these latitudes.

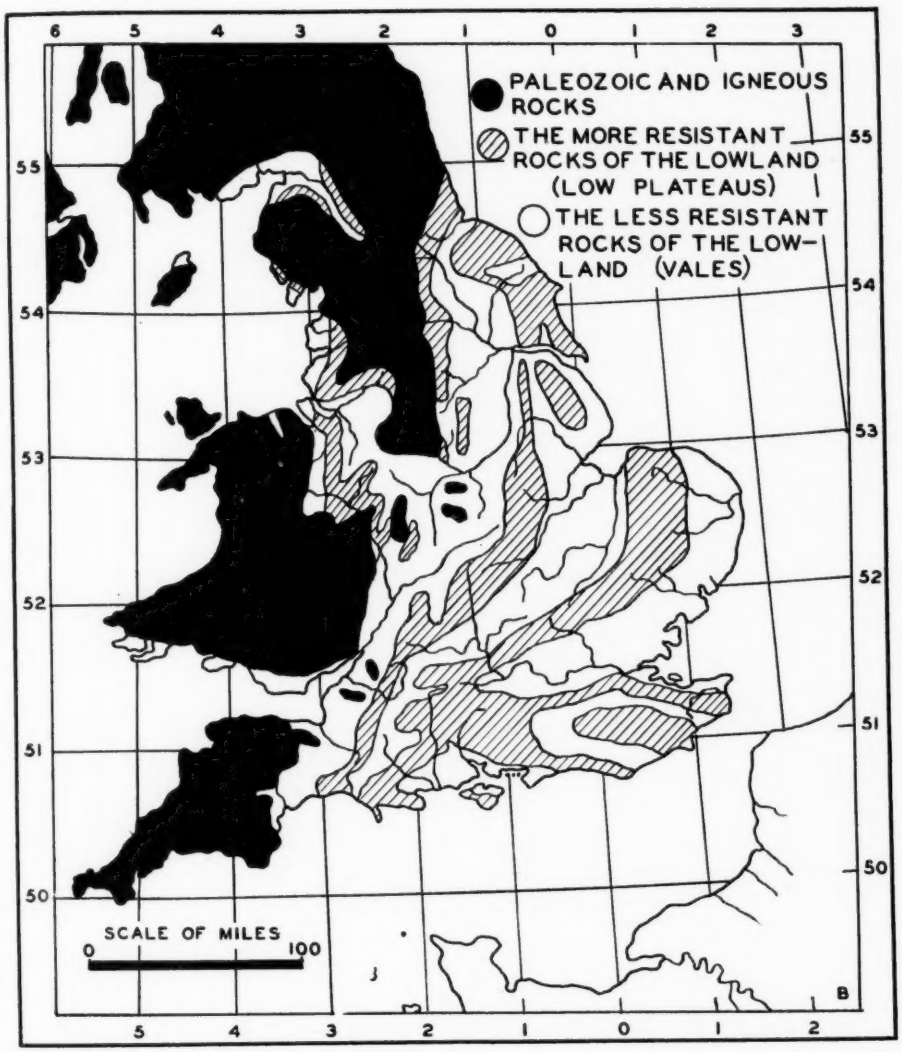
In the distribution of sunshine, the English Lowland is again the most favored climatic division of Great Britain. Except over its northeastern section the number of hours of sunshine in an average year exceeds thirteen hundred, or 30 per cent of the maximum possible, and is thus above the average for Great Britain, where the isohels range from sixteen hundred hours along the south coast of England to less than a thousand in the western Highlands of Scotland.

Thus in every climatic respect, the English Lowland is more favored than any other part of Great Britain; and since it is at least twice as large in area as all the other small lowlands in the island taken together, it has always been the most fertile and populous section. At the present day it carries 33,000,000 people, or three-fourths of the population of Great Britain, on about five-twelfths of the area. This gives a mean density of population of nearly 900 persons per square mile, which makes it one of the most populous lands of the world, and nearly four times as populous as the northern half of the island.

RELIEF

In structure and relief this region is a belted coastal plain laid down on the southeastern edge of an older land mass, whose exposed remnants now form the other regions of the British Isles. The belting is caused by the outcropping edges of porous, and therefore more resistant, limestones alternating with those of impervious and less resistant clays. Nearly the whole are of sec-

ondary (Mesozoic) age, ranging from Permian thru Trias and Jurassic to Cretaceous; only in the extreme east and south are there a few small areas of tertiary sands and gravels. This struc-



ture has given a great variety of soils and of topographic features within a small region; tho most of it may be classed as low limestone uplands and clay vales, with mixed soils, underlain at no great depth by paleozoic and older rocks.

Both the east and south coasts, which meet almost perpendicu-

larly in the continental angle of the island at Dover, are obliquely transverse to the main outcrops of the belted strata of the Lowland, and are therefore as varied in form as that is in relief and structure. Where the vales come to the coast the tidal currents enter the river mouths to form long estuaries, which are the chief inlets and which penetrate far inland. The chief of these are those of the Thames, Severn, Mersey and Humber, at the four corners of the main area which is the Midlands, together with the wide and shallow Wash to the east and the smaller inlet of Southampton Water near the middle of the south coast.

The first five of these estuaries receive nearly all the larger rivers of England, a series which together drains three-fourths of the area of the country. Thus the characteristic trend of the rivers is a dispersal to southeast and northeast, southwest and northwest, from the low plateaus in the center. This dispersal of the river valleys ensures that there is no principal focus of natural routes in the midlands of England. The several valleys look outward to the seas rather than inward to any common focus.

The decisive features in the relief are the uplands on the limestone ridges, and the valleys between them. The uplands are low plateaus from 200 to 600 feet above the sea, open and easily accessible from all sides; tho most of them are steeply scarped to the northwest. The valleys are wide and shallow vales, once cumbered with dense forest and marsh, but long ago cleared and brought under cultivation and made easily accessible. Hence the whole region is divided, but not separated, into many small and distinct subregions of vale and upland, between which there are no serious hindrances to easy and frequent communications. It is misleading to call it a plain, for it has none of the uniformity and monotony of relief and structure usually associated with extensive plains.

NATURAL RESOURCES

The natural resources of England are many and varied. And the uses made of them at several stages of human culture have been of decisive importance in the evolution of the life and civilization of its people.

First of these resources is the fertility of the soil. This is generally high, especially in the Midlands, tho there are many areas of poor soils. But in these latitudes the natural renewal of

fertility is slow; and not until the introduction of systematic manuring and rotation of crops in the 17th and 18th centuries was it possible to obtain a crop every year from each field. Perhaps nine-tenths of the present productivity of the soil of England is due to Man rather than to Nature; since under Queen Elizabeth the country was barely able to support two million people and it could now feed twenty million.

Next to the soil we may place the climate, which is indeed an equally essential factor in fertility. The climate of England is not favorable to really dense vegetable growth—it has not sufficient heat or sunshine for that—but it allows the free growth of hardy crops and grasses; and it is very rarely either so hot as to be enervating or so cold as to numb. It has been said to be less a climate than a quick succession of varied samples of weather; and it does give to a very high degree the mental and physical stimulus of frequent small changes; while it allows of twelve months of outdoor work in most years

Three of the natural resources which are implicit in the climate and physiography of England have been of such importance in its development as to deserve separate mention even in a brief summary. The clearing of the forests allowed an abundant growth of grass, which has in turn enabled the country to maintain a large number of domestic animals and so to have abundant animal labor. The climate and relief gave the possibility of using in every part either, or both, wind mill or water mill; and as early as the tenth century every manor had its mill. It is largely to these forms of mechanical and animal power, which have been in use for more than a thousand years, that we owe the fact that our social system had no basis of slave labor, so that it was possible to develop a society of free men from the very beginnings of England's history.

Local deposits of iron ores were worked on a small scale to produce weapons and tools thruout the Middle Ages; but the mineral resources became important on a large scale only with the modern Industrial Age. The coal under the northeastern section of the Lowland is sufficient to last for 600 years more at the present rate of usage. Most of the effective reserves of iron ore are in the Jurassic ridge which extends right across the Lowland from northeast to southwest; but these supply less than half the present demand. There are, however, great reserves of low grade ores; and when increase of technical knowledge and exhaustion of rich ores

elsewhere make it possible and necessary to fall back on these, England will again be relatively rich in iron ore resources.

The researches now proceeding into the possibility of harnessing the tides point to another of the natural resources. When England succeeds in making economic use of the tidal energy which now goes to waste on its shores, it will tap an inexhaustible and practically limitless source of mechanical energy, within easy reach of every part of the country.

Still another of the natural resources is that of location. A full discussion of the influence of the location of the island off the Ocean Gate of Europe on its people and their institutions would be a full course on the historical geography, or the geographical history, of England. Without the advantages of that location the modern expansion of the English would probably never have taken place; and in that case the world would have been a very different one from the one we know.

The rapid review already made may justify the statement that the English Lowland is one of the most favored of the smaller regions of the world in the natural resources which permit of a high development of modern civilization. But there is still another group of geographical facts which deserve mention. I have already pointed out that there is no dominant focus of natural routes in the middle of England. The dispersion of the rivers, and the importance of the waterways around and into the island, led to the growth of the chief cities of early and medieval England at the bridgeheads of the many estuaries. It so happens that only one of the chief estuaries is of such a form as to concentrate this city growth. Along the others the cities were, and are, dispersed; on the Thames alone is there a single dominant estuary port. And this one is near the continental angle of England, and so far inland as to be central in that quarter of the country. Hence England added to its other advantages in the centuries of its growth that of having its political, economic and social development focussed on one dominant center. It had the unity of a region without serious internal barriers, not too large to be organized as one state in an age of horse and foot travel, within definite and strong natural frontiers of sea and highland, and focussed on a single metropolis. These factors enabled England to be almost the first of the nations of the modern world to attain unity—unity of law and custom, of language, and of national consciousness; while the di-

versity of the land prevented the unity of the people from degenerating into uniformity. England is marked by the early stage at which it developed the practice of that toleration of internal differences which can only come when unity in essentials is secure.

All these geographical factors of which I have spoken, and others, combined with many non-geographical facts to determine that, at the beginning of the Expansion of Europe, in the period of the colonization of the New World, England was the strongest of the colonizing nations. Smaller, and apparently weaker, than either Spain or France it had over them the advantages of insular location, freedom from continental entanglements, a far higher development of free institutions, and a more flexible social and political organization. And when, by the middle of the nineteenth century, the New World was fully staked out, the world awoke to the fact that all but one of the temperate regions of that New World were occupied by the Englishry. Except in South America, all the lands of the temperate zones outside Eurasia are parts of the British Commonwealth or of the United States.

WHAT HAS ENGLAND IN FACT CONTRIBUTED TO THESE YOUNGER NATIONS?

First and foremost—Men. From the beginnings of the colonization, three hundred years ago, not less than fifteen to sixteen millions of emigrants have left Britain to make their homes in the New World. They were the first and the most numerous of the Old World peoples in this migration; and, with the strong backing of the Mother Country, they secured control of the new lands and the power to determine their future.

With them went a less tangible but perhaps more important contribution—the social and political ideals and forms of organization which are expressed in the English Common Law and the English Parliamentary System of Government.

These things are far more enduring than States or Empires. Even now the British Empire is being transformed by the natural process of growth into a free association of free peoples. What it will become in the future only the future can know. But the civilization of a quarter of the world is built on, and shaped by, the laws and customs, the language and literature and traditions, which took their rise in England, and were there developed and moulded in and by that geographical environment which is England.

VISUAL AIDS: THEIR USE AND ABUSE

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INTRODUCTION

A little more than a century ago one of the early geographies published in America had this significant statement in the author's preface: "It has not been deemed expedient to sprinkle the book with pictures, from a conviction that they serve to divert the attention of the pupil rather than to inform his mind or improve his taste."

Since that sentence was written we have gone so far in our use of all forms of visual aids that the last word of our title seems justified. We have made much use of visual materials, but there has also been some abuse.

THE NEED

Modern geography has profited by the knowledge that psychology has given to us, that of all types of memory the visual is the strongest in all children tested in our school. The same is doubtless true of adults. What we see we know and remember much better than what we hear. If this fact be accepted, the larger the collection of objective material we have at our disposal and the more use we make of it, the better and more effective our teaching.

KINDS OF MATERIAL

The quantity of material that it is possible to secure even with a very limited amount of money is usually beyond the storage capacity of the ordinary school room. We need to note and select the most useful with considerable care. Just a list of some things will help us to see this point more clearly: (1) maps of many kinds, expensive and inexpensive, (2) charts and diagrams bought or made, (3) lantern slides, bought, rented or made, (4) stereoscopes with views, (5) pictures of all sorts from hundreds of sources, (6) exhibits from various manufacturing companies, (7) sand tables and objects to use with them, (8) local materials such as rocks, minerals, etc. Many others will suggest themselves.

In determining what to get for our own use we should keep in

mind two points of view—expense and real usefulness. To make this more definite suppose we discuss briefly a few of the items listed.

MAPS AND GLOBES

Globes and maps are the most expensive of our needs if those of good quality be chosen. Yet they are indispensable and need the most care in selection. A few suggestions follow: (1) a globe need not be large for the average classroom if the coloring be well done; twelve or sixteen inch globes are large enough for any classroom; (2) it need not have a movable meridian, a horizon, or many of the expensive devices often a part of it; simplicity is a good feature; (3) the adjustable standard type that permits bringing it close to the pupils and raising and lowering at will, is one of the best and is not more expensive.

What constitutes an essential list of wall maps? A minimum list should at least include: (1) a map of the world, (2) the continents taught in the grade, (3) a good map of the United States, (4) the best state map that can be procured. Many other maps are desirable but not absolutely necessary.

A word as to choice. If only one map, political or physical, can be purchased, by all means get the physical. It usually has upon it all the place geography you should or could teach and, in addition, its physical features help to show why the place is located where it is and why it is as large as it is.

A good map is a shorthand method of representing a great mass of geographical information that pages of a book or even whole sets of pictures could not give, and put in such a form that comparisons and relations can be seen at a glance. McKinder, an English geographer, declares: "The root of all geographical ability lies in being at home with maps." Teachers usually recognize their value but misuse them in many ways. The most common fault seems to be the failure to realize that map study should almost invariably precede the study of the text. Let the pupils realize just how much a map, properly interpreted, can tell about a region of which they have no previous knowledge.

Another common error is the old method of teaching directions that the top of a map is north, the bottom south, the right side east and the left west. When will teachers learn that the only true way to read directions is by meridians and parallels—that meridians on any map are true north and south and parallels run east and west?

Again so many teachers misuse their world map. The most common projection in use is the Mercator. On this map direction is absolutely the only thing that is correctly shown, and yet some teachers use it for every purpose. How can children help getting wrong ideas of comparative areas when their teachers constantly put this map in front of them from the fourth grade up? If ability to use maps is as fundamental as McKinder states, we need to give that phase of our work more careful study.

PICTURES

All companies dealing in geographic supplies sell wonderful pictures for use in geography; but assuming again, that our money is limited, we would do well to save it by procuring pictures in other ways. All the literature of the day is full of good pictures, if we have eyes to see and know what we want. To prevent waste of time and energy, we should list, as the need arises, pictures that would illustrate the subject matter we are teaching. This will make our search more definite. The pictures first secured may not be wholly satisfactory, but we may easily discard any when we find a better one to take its place. These pictures, regardless of size or quality, need to be arranged and classified so as to make them quickly available when needed. One simple method is to select pictures with some care to illustrate the units of the course we are teaching, and put them in strong manila envelopes or folders, labelled on the outside. These envelopes can then be filed and the one needed taken out at any time. If, as in the *National Geographic Magazine,* good pictures are on both sides of the sheet, we may file them unmounted. For use in class fasten them to a cardboard mount of the right size by means of paper clips.

If our collection of pictures is large and the demands upon it of a more varied sort, a more elaborate plan is well worth while. The picture selected should be mounted upon some neutral colored photo board, bought in quantity, if possible, to save expense. A filing cabinet of some sort is almost a necessity and the size of the mounts should be determined by the size of the cabinet. The caption for each picture should be placed upon the back rather than the front. The geographical classification and indexing may well follow some such scheme as is used by the Keystone View Company for their lantern slides. Each picture may be labelled in colored ink on the upper right hand corner on the front side, with the ab-

breviation for the name of the country in which it is located, and given a serial number. For example, Arg. 46 would mean picture number 46 under the geographical classification Argentina. In the United States a state classification may be used, as Cal. 27. This method leaves room for expansion of the files to any number of pictures under each country or state. The subject classification on small cards in the index file may be cross referenced and made as comprehensive as one wishes; the references, however, will always be by country or state and serial number, so that any picture may be found without trouble.

There are so many ways of using pictures in teaching that methods are matters of opinion; but there are a few fundamental "don'ts" upon which teachers of experience would agree. First, don't use so many pictures in the classroom that there is not sufficient time to interpret them. Each picture should have at least one, definite idea to be conveyed and the teacher should see that the pupils get it. Many able teachers prefer to have uncaptioned pictures for recitation work, because the pupils then interpret their own pictures and develop the ability to think geographically. Don't miss the opportunity of now and then using good, uncaptioned pictures for testing. It may not be possible to have a sufficient number of copies of the same pictures, but those of about equal difficulty may be selected.

SLIDES AND LANTERN

Slides, and a lantern to show them, are considered by many superintendents as too expensive to warrant general use. However, they are so desirable that no effort should be spared to get this equipment wherever possible. A good lantern with cord for connecting to an ordinary electric socket, or with an acetylene burner if electricity is not available, may be purchased for less than $65.00. Such a lantern requires only the semi-darkness, secured in any classroom with dark shades, to give an excellent picture. No special screen is required. The back of a large map or even the ordinary blackboard will serve. If the lantern were purchased to serve a whole "union" it could have its regular schedule and be in constant use. Of course if many slides were purchased at once the expense would be great; but a few at a time of the subjects most needed, will build up in the end a much more satisfactory collection than buying in sets. In the meantime we can still make good use of our lantern with those borrowed from various sources. Apparently

many superintendents and teachers are not aware of the great variety of beautiful and useful slides that may be secured from various sources by merely paying the expense of transportation. We cannot here list the opportunities, but certainly there are more than a thousand that can be obtained in this way.

As in the case of the pictures, lantern slides may be used with profit, in a great variety of ways. Probably the poorest method, even if it is the most commonly used, is showing a large number of slides with a lecture by the teacher. The pupil participation is utterly lacking in an exercise of this kind, and its teaching value is much lessened for that reason.

A more useful plan is to use slides for a review or for summarizing a subject. As each picture appears on the screen let the pupils locate and interpret the scene themselves. If the slides are being shown to a class for the first time, only a few should be used. Each one selected should illustrate certain points of the lesson being taught and if the class can discover them without direct comment by the teacher, the better will be the results.

EXHIBITS

The number and variety of exhibits to be secured from manufacturing companies by paying transportation charges is so great, that we need be limited only by room available for storage. However, not all are worth while. We should study our courses, note what exhibits will be of most help, and secure them first. A few well used are much better than a hundred in chaos in a closet. Each exhibit should have a very definite purpose as long as it is displayed. When not in use it should be kept out of sight.

LOCAL MATERIALS

If teachers would only utilize their local material they would find it infinitely more valuable than that procured from distant sources. For example, in Maine, the pulp and paper industry is important, and needs emphasis. From the Hammermill Paper Company, Erie, Pennsylvania, an exhibit may be obtained that is excellent for teaching purposes. A certain teacher used this exhibit for many years. A wide-awake pupil proposed making up an exhibit with bottled samples and charts and diagrams from a local mill. The interest in it was so much intensified because it was of their own making, that the teacher learned a valuable lesson. In

most schools, a small museum could easily be built up from objects that the students could procure themselves from local sources. Common rocks and minerals, exhibits from local factories, pictures and lantern slides of community scenes, are some of the things that come readily to mind.

CONCLUSION

After all, the teacher is the vital factor in the use of visual aids. An abundance of good material may be of little use if teachers are not intelligent in selecting the right things and in using them at the right time. No superintendent or principal can take a quantity of illustrative materials, say to his teachers, "Please use this now," and expect it to be of any great value. No one but the teacher of the subject can adapt visual aids to the teaching units and know when and what to use. Teachers need as careful training in this matter as in any of the fundamentals of their work.

WHAT METHOD SHALL WE USE IN TEACHING GEOGRAPHY?

EDITH V. BRILL
Supervisor, Malone, New York

When Bernard Shaw said, "they who can, do, and they who cannot teach," he certainly must have been out of touch with the modern school. A careful survey would have shown him that the educational field presents a scene of lively activity. Among those engaged in this field there is a pretty general awareness of the radical changes in theory and practice which have been taking place during the past few years. The demands which the age is making upon the present generation necessitate a different type of schoolroom training from that which served past generations fairly well. New courses of study are being worked out with meticulous care. Curricula are being reconstructed with a view to eliminating outgrown subject matter and to including that which will prepare boys and girls to cope most successfully with the problems of life. The world is looking for "education for a changing civilization."

CHANGED CONCEPTION OF GEOGRAPHY

There is probably no subject in the elementary curriculum in which greater changes have taken place than in the study of geog-

raphy. The old formal textbook method of teaching and the memoriter method of learning taught us many facts about "the world in which we live," but we have come to see that there is a richer meaning in the study. Now we are studying man as he is at home on the earth which is the scene of all his activities. Its forces have served in large part to mold his physical, intellectual, moral, and economic life. Miss Ellen Churchill Semple says, "Man is the product of earth's surface. Earth has fed him, set obstacles in his way for his physical and mental development, entered into his bone and tissue, mind and soul." Geography is the strategic subject connecting natural environment and man's activities. Its study should enable pupils to interpret all people and their lives in terms of their environment and to recognize the contribution of all to the welfare of all. This must lead to an understanding of what world interdependence means and to a realization that the study of geography is as comprehensive as life itself. Its influence is traceable thruout all curricular activities of the elementary grades. It provides an incomparable unit of integration of all the elementary subjects.

The World War gave impetus to the dissatisfaction which had been gaining ground for some time regarding the teaching of geography. The weaknesses of our geographical knowledge showed up glaringly during those trying months and attention turned eagerly to all sources of geographical information. Books, magazines, newspapers, atlases, maps, pictures, etc., were searched and to the old "what" and "where" was added an insistent *why*. The viewpoint was changed.

IMPORTANCE OF DEFINITE OBJECTIVES

Psychologically and logically this new attitude toward the study of the earth as man's home and of his relationship to all its forces raises the question of what methods are best adapted to the teaching of these ideas. Many suggestions have been made but before any work is attempted the aims and objectives must be clear and definite. One writer has given us the following: (1) enrichment of experience; (2) cultivation of varied interests; (3) enjoyment of commonplace things; (4) stimulation of travel (real or imaginary); (5) understanding of daily news; (6) promotion of sympathy for other peoples; (7) intelligent solution of civic problems; (8) conservation of resources; (9) stimulation of trade and commerce. To these we would like to add one more, the attempt to view our own

ideals and manner of living as they appear to other peoples. May it be that they are studying us with sympathy?

EFFECT OF THE NEW VIEWPOINT UPON TEACHING PROCEDURES

Geography is ideally adapted to socialized work since it is a study in coöperation. It connects man's activities and his local environment, therefore every pupil is expected to contribute to the work of the group. It is essentially human in all aspects and implies relationships to all men as well as contacts with earth. A functional approach is made easily in the lowest grades by means of field trips which introduce the ideas basic to the study of geography. The teacher's knowledge of child psychology should enable her to discover the child's apperception of local conditions and to lead him on into richer experiences and broader fields of thought and action. To discover what a child knows and to lead him to use that knowledge as an aid in mastering new related subject matter means the awakening of real interest, the beginning of correct study habits, and the saving of time.

PROBLEM OF SELECTING SPECIAL METHODS

Of the methods which have been evolved to meet the newer needs there are several which stand out because of their sound pedagogical principles. From these the teacher must select the one or ones best adapted to securing her objective. A prime essential is a thoro familiarity with any method which is to be used. The progressive teacher will adapt any method to the needs of her class without violating the principles involved. Many disappointments and unfair evaluations of methods have arisen from a too swift response to some request for their use. Teachers should acquaint themselves carefully with the procedure and its fundamental ideas, then refuse to be discouraged by a few results which do not meet her expectations. It remains for her to find the causes of failure and to remove them.

BASIC IDEAS OF SOME SPECIAL METHODS

Unfortunately a certain amount of confusion has arisen with regard to some excellent methods. An apparent overlapping and a lack of careful delimitation on the part of the originators have occasioned much unprofitable discussion, but we may leave the technicalities for the educators to adjust and we may derive much benefit from these methods as we understand them. The Project and Prob-

lem Methods are the two that suffer most in this respect. The project is generally considered to be a wholehearted purposeful activity, carried to completion—a unit rather than a fragmentary exercise. It involves pupil planning, a considerable amount of sensory contact with objects or things, muscular activity, solution of a number of problems, size of undertaking, coöperation of a group, life situations, and worthy motives. The problem is a "felt need" which may be purely intellectual or subjective and which may be worked out on purely intellectual lines. It may be artificial or speculative in character.

The Outline Method seems to have fallen into disuse as a method, yet in the "Organization" step of the Unit Mastery Method, as in the same phase of every good method, the arrangement of thought into outline is practically inevitable. Its mechanization by routine-minded teachers who did not fully understand its use hastened its displacement. Any method reduced to a mechanical, rule-of-thumb basis becomes ineffective if not positively retrogressive. Every method requires a live teacher-student attitude in order that its possibilities may be recognized and that it may be kept full of fresh appeal.

The Topical Method, like the Outline Method, has its dangers to avoid, yet rightly used it is effective. It provides all the relationships and associations necessary for well organized knowledge.

The Type Study has as great possibilities as any we have known, but it may become misleading unless care is exercised to keep the study true to actual conditions. Dr. Charles A. McMurry, in his Special Method of Teaching Geography, has presented a masterly type study plan, unquestionably sound and practical, but in the use of the plan there has been a failure to build up connections which would integrate the units of study.

The Regional Method, upon which some of the best recent textbooks are based, appears to us more like a controlling idea than a detailed procedure. It is a natural, reasonable, controlled examination of a well-defined geographical unit, e.g. climate, productions, population, etc., as the facts are found in a portion of the earth's surface, with only incidental consideration of political boundaries involved. This is an excellent plan for the development of reflective thinking and reasoning, leading to the use of good judgment.

Other methods such as the visual method, journey method, dramatization, etc. have been used with highly satisfactory results.

GENERAL METHOD—DALTON PLAN

The Dalton Plan is among the newer and more radical general methods. It calls for a school organization peculiar to itself. Each classroom becomes a laboratory for a special subject and each teacher becomes a specialist. The pupils are the experimenters. The teachers direct pupils in matters of technique of work and by a system of checks see that standards are maintained. Children are given real jobs under an assignment plan called a contract for a month's work in advance. They may do this work when they choose, within the month's limit. They check their own progress on their grafs weekly. Conferences are held with teachers daily. The plan is based on the idea that growth in character is the foundation of edueation and that schcols are socialized laboratories where community life and community conditions prevail. Responsibility for the work, under conditions of large freedom, rests upon the pupil. It seems to be a fine illustration of "a task, a plan, and freedom to perform the task." It is a movement still in the experimental stage but apparently successful as worked out by Miss Parkhurst in the schools of Dalton, Massachusetts. It is being tried in other places and teachers may well watch its progress.

GENERAL METHOD—UNIT MASTERY

Perhaps the latest experiment in methods to claim wide attention is the Unit Mastery Method, applicable, like most others, to all fields of learning. This idea has originated with Dr. Morrison, of the University of Chicago. It is being tried out in slightly modified form by Miss Kelty and others and its principles and their operations are being carefully studied and evaluated. The core of this method is the mastery of a unit of work before another unit is attacked. Its specific objectives for intermediate grades are: love of the subject, "ability to comprehend a coherent narrative of successive events," a rudimentary understanding of the molding influence of geographic and economic forces, and ability to use books. In the technique of the method the selection and treatment of the units is of primary importance. A series of daily lessons may be "a handful of loose beads," but Unit Mastery means organization of knowledge.

One detail in Miss Kelty's modification is the assignment plan, There are minimal essentials to be mastered by all, increased assignment for the average group, and a yet richer assignment for

the bright pupils. The grouping is elastic, as it depends upon the work done. The claim is made that many "slow" children develop into average pupils and "average" pupils frequently qualify for the highest group.

There are five steps in the procedure: (1) exploration or preparation; (2) presentation; (3) assimilation; (4) organization; (5) recitation. The first step is intended to discover what useable information the pupil already possesses that no time may be lost by teaching what is already known or by assuming that pupils know what they do not.

The formula of procedure consists of: (1) pre-test; (2) teach; (3) test; (4) diagnose results; (5) adapt procedure; (6) re-teach; (7) re-test to the point of mastery. Mastery of the assignment is the standard of "passing." The subject matter is known or it is not known. This method does not require a reorganization of the school plan. It is deserving of careful study.

IMPORTANCE OF METHODS OF STUDY

We have been considering methods of teaching yet methods of studying geography are just as important. The teacher should master a student method of study for herself then help her pupils to master it. The supervised study period makes this possible.

THE TEACHER'S RESPONSIBILITY

In studying the various methods of teaching and in examining the illustrations given, it has been interesting to note how large a part of the illustrative subject matter has been selected from the field of geography. This confirms the belief that geography is not quite the "most neglected as well as the most poorly taught of school subjects," and indicates a growing interest in the study. When the teachers catch the vision, the situation will improve rapidly. No method, however successfully it has been used, can assure a teacher of its success in her own hands. The teacher's personality, her intelligent and sustained enthusiasm, her love of the subject and her willingness to treat each unit of work from the viewpoint of each new class's needs are vital elements in her success. A thoro knowledge of her method and fresh preparation every time a unit is presented to a new class will yield the result hoped for by the real teacher of a modern school.

A "DAY" ON THE EARTH

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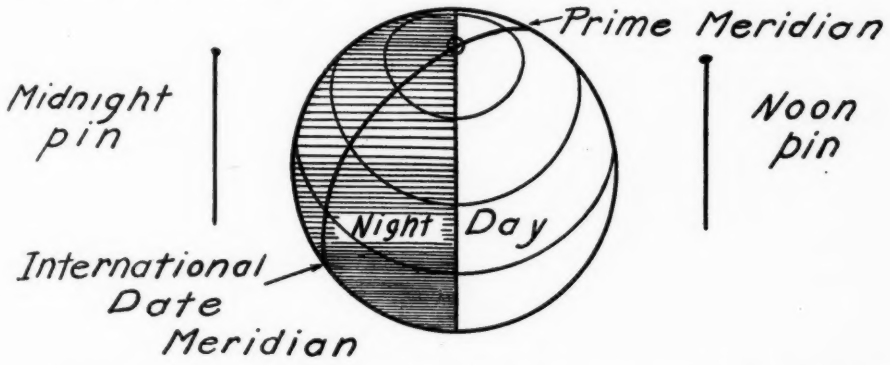
Most students and teachers experience difficulties in understanding clearly some of the facts, and reasons therefor, concerning time on the earth's surface, and especially concerning a "day," where and when it begins, and its relation to the International Date Line. The following device and methods are offered as a help in making clear some of the questions involved.[1]

Use a small globe, or other roundish object, and on it indicate north and south poles. Draw on globe from north to south one line to represent the Prime Meridian and opposite this line draw another to represent the International Date Line. Place globe on table with axis vertical, north pole up.



Stick into the table, close to the globe, two long pins, a white one on the side of the globe upon which you assume the sun to be shining, and a dark one on the opposite side. The white pin represents twelve o'clock noon, and it is always in line with the sun's rays which mark the noon hour on the surface of the globe (earth). The dark pin, being opposite the white one, represents midnight.

You now have two fixed positions in relation to the sun—noon and midnight. Also, observe that the half of the globe whose center line is at the noon pin is always in the sunlight while the other half whose center is at the midnight pin is in darkness.

[1] Considerations of changes in time, hour by hour, are not included in this discussion.

Place the globe between the pins so that the Prime Meridian line is at the noon pin and the Date Line is at the midnight pin. In this position the following time conditions exist, say on Wednesday:

1. Twelve o'clock noon at Prime Meridian.
2. Twelve o'clock midnight on *same day* at the International Date Line.
3. From the Prime Meridian in an eastward direction (toward the right) it is afternoon, i.e., it is one, two, three, four, five, six, seven o'clock, and so on for each 15° of longitude, to twelve o'clock midnight at the Date Line.
4. From the Prime Meridian in a westward direction (toward the left) it is before noon, i.e., eleven, ten, nine, eight, seven, six, five o'clock and so on for each 15° of longitude to the *same* midnight at the Date Line.
5. Every place on the surface of the earth, for a brief instant, is having *Wednesday.*

Now rotate the globe eastward (toward the right as the earth rotates) about an inch or two (see diagram) and observe that the following happens:

1. The noon pin and the midnight pin remain stationary because the sun has not moved (in relation to the earth).
2. As the Prime Meridian moves eastward, by rotation, places on the earth's surface move to and pass under the noon pin, hence the noon *hour* on the surface moves west. Note that the sun's *noon position* does not actually move, but the eastward rotation of the earth causes the westward movement of noon *time.* Hence, we say noon is moving west, and so places west have earlier, A.M., or, "before," time, and places east have later, P.M., or "after," time.
3. As the Date Line moves eastward by rotation and leaves the midnight pin a new day, Thursday, begins *at the Date Line* at the instant this line leaves the midnight pin.[2]
4. As places move to and pass under the *midnight pin* their *Calendar Day* changes from Wednesday to Thursday at the instant they pass the midnight pin.
5. It is now Thursday on the earth's surface in that narrow segment from the Date Line westward (to the left) to the midnight pin.

[2] Nations have agreed that the new day shall begin at the Date Line when that line passes the midnight position.

6. It is now Wednesday on the remaining part of the earth's surface, i.e., in the larger segment from the Date Line eastward (to the right) past the noon pin and so on around to the midnight pin.

7. The midnight pin has remained stationary but the midnight hour has moved westward (to the left) on the surface.

Rotate the globe slowly eastward (to the right) and observe:

1. The Prime Meridian is moving eastward by rotation.
2. The noon *hour* is moving westward on the surface.
3. The Date Line is moving eastward by rotation.
4. The midnight *hour* is moving westward on the surface.
5. The date is changing from *Wednesday* to *Thursday* continuously at the midnight pin.
6. Thursday is spreading westward and is gradually covering the earth's surface.
7. Wednesday is disappearing as the Date Line approaches, passes the noon pin and moves on around toward the midnight pin.
8. Finally, at the instant the Date Line comes under the midnight pin, Wednesday disappears and all places, for an instant, have Thursday.

Repeat a rotation and observe that any one place on the earth's surface:

1. Has each of the 24 hours of a given day.
2. Has earlier, or "before," time than places east of it.
3. Has later, or "after," time than places west of it.
4. Changes its *Calendar Day* when it passes under the midnight pin.

Special points to observe:

1. That at the Date Line, wherever it may be during rotation (except the instant it is at the midnight pin) that on the west side of it is the *new day* and on the east side is the *old day*.

2. That travelers in crossing the Date Line from east to west, at any hour, change the calendar to the next day, and in crossing from west to east change the calendar to the preceding day.

3. That the old day is passing out and a new day is beginning continuously at the midnight pin.

4. That all places, in the course of 24 hours, pass under the midnight pin, hence each place begins its new day at twelve o'clock midnight and ends it at twelve midnight.

5. That a given day, say Thursday, actually exists on the earth's

surface for a space of forty-eight hours, i.e., for one period of twenty-four hours immediately adjacent to the west side of the Date Line and for the succeeding twenty-four hours immediately adjacent to the east side of the Date Line.

6. That the International Date Line marks the place at which the new calendar day begins *first,* and at which calendar time changes.

EDITORIAL NOTES AND NEWS

Some great engineering feats were completed or pushed towards completion in 1930. One of these is the Bonnet Carre Spillway, twenty-eight miles above New Orleans which is nearing completion. When floods threaten the city, it will divert the flood waters of the Mississippi River into Lake Ponchartrain. Another achievement is the new international tunnel, the Fleetway, between Detroit and Windsor, formally opened last November. A thousand motor cars an hour each way can pass thru this mile-long tunnel under the Detroit River.

Other triumphs in engineering are the great arch bridge across Sydney Harbor; the 700 mile highway connecting Santiago and Havana, Cuba; the raised auto highway on Manhattan along the Hudson River; the Chrysler and Empire State Buildings of New York City, both overtopping the tallest structures in the world; the Soviet's dams across the Ural and Dnieper rivers; the railways linking the Caspian Sea with the Persian Gulf, and Turkestan with Siberia.

Then there are triumphs in communication engineering like the repair of the Atlantic ocean cables wrecked in the earthquake off Newfoundland and the radio-telephone hookups between South America, Europe, United States, and Sydney, Australia. These accomplishments to be interpreted geographically should be related to features in the natural landscape where they are being enacted. Let your students try doing so. Also, if interested in similar current events having geographic significance, encourage reading of newspapers, magazines and other publications. One very inexpensive source of such information is the *Geographic News Bulletin* published weekly by the National Geographic Society of Washington, D.C., and the various publications of the Department of Commerce. A meritorious publication, free because of its advertising which is, however, not at all offensive, is the *International Communication Review* published quarterly by the International Telephone and Telegraph Corporation, 67 Broad Street, New York City.

Lately the world market has been able to absorb only two-thirds of the output of Chilean and synthetic nitrate. Therefore, Chilean and European producers last year signed an agreement designed to limit production and competition in the home market and to control market prices. The signatory agents in the cartel are Germany, United Kingdom, Netherlands, Poland, Czechoslovakia, Italy, Norway, France, Belgium, and Chile. These nations produce 80 per cent of the world's output.

The United States Coast and Geodetic Survey announces the publication of Sectional Airway Map No. Lower K-16, Chicago, the first of a series of 92 sectional airways maps which will eventually cover the United States. These sectional maps will probably

supplant the strip airway maps, since flying is no longer confined to the commercial airways mapped on the strip maps. Singly, the maps will sell for 40 cents and may be secured from the Director of the Coast and Geodetic Survey, Washington, D.C.

How changes in fashions and government decrees sometimes wreck industries is shown in the following incidents quoted in *Commerce Reports*. When women stopped wearing plumes the export trade in African ostrich feathers practically ceased, and men whose deft fingers formerly curled these feathers were left jobless. Similarly, last year, the export of rabbit skins from Australia decreased about three million dollars, largely because many men preferred light felt hats, or went hatless. Rabbit fur does not take light tints. Also, Ethiopian wax, especially suitable for cathedral candles, became a drug on the market when Russian church services were restricted.

A map of the world showing Trade Routes and shortest sailing distances between Canadian and foreign ports has been prepared in the National Development Bureau of Canada, and is now available free, to teachers, from the Department of Interior, Ottawa, Canada. In addition to the trade routes, the map shows the principal railways and the extent of the British Empire. Another new map, also available to schools, shows the distribution of Canada's natural resources such as agricultural areas, forests, and minerals. It is of great value to all who teach the geography of Canada.

GEOGRAPHICAL PUBLICATIONS

F. F. Cunningham. **Laboratory manual in the Geography of North America.** 50 pages including 33 maps. John Wiley and Sons, Inc. New York, 1930.

This laboratory manual or workbook is specifically designed to accompany Miller and Parkins' "The Geography of North America." It is especially devised for those wishing to treat the geography of North America by the laboratory method. It is a loose-leaf manual consisting of questions and assignments in chapters paralleling the text rather closely. Thirty-three maps are included to furnish map exercises and other work material. Much work has been expended in the preparation of this manual.

Several weaknesses are apparent, however. The manual fails to utilize adequately the questions at the end of the chapters, the accurate "figures," and the excellent illustrations of its accompanying text. Many effective "workbook" devices, common in contemporary manuals, are lacking, such as, the making of graphs and tables, matching of questions, completion questions and others. The number of questions and assignments is over a thousand. In a quarter's course this would mean assigning over eighty questions per week. Since some of the questions require much time to answer it is a rather ambitious program.

Some carelessness is evident, especially in the cartographic work. There are several omissions in the boundaries in the Canadian maps. There are some errors in the rivers of the United States. For instance, the source of the Red River of the North is incorrectly placed in Minnesota. These inaccuracies are in striking contrast to the carefully prepared text which it accompanies.

Many of the deficiencies could be remedied, however. The manual will be of service to many and it will fill a longfelt need for those wishing to teach the geography of North America by the laboratory method.

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D. C. Worcester. **The Philippines, Past and Present.** Revised and Enlarged by Ralston Hayden 874 pp., 144 plates, 2 maps, bibliography. The Macmillan Company, New York, 1930, $6.00

The authoritative work by the Secretary of the Interior of the Philippine Islands 1901-1913 has been brought up to date by Dr. Hayden, Professor of Political Science of the University of Michigan, who has added a full biographical sketch, four chapters dealing with the period since the first edition was published in 1914, and hundreds of footnotes.

This book is recognized as the most comprehensive, substantial single volume on the Philippines. Altho much of the book deals with political history, and little is organized or written as a geographer would do it, nevertheless it contains such a wealth of facts concerning the Philippines and so many intimate descriptions that it merits the attention of geography teachers and a place in sizable geographic libraries. Of special interest is the abundant evidence presented which tends to show that the Filipinos are not yet ready for independence.

Indiana University S. S. VISHER

William Rabenort and J. H. Coleman. **Graded Drill Exercises in Geography and Map Study.** Noble and Noble, New York. 1929 and 1930.

The series consists of eight books which conform to the new Syllabus in Geography for the schools of New York City. The books are distributed thru the grades as follows: (1) 5A—New York State and Other Atlantic States, (2) 5B—The Central and Western States, (3) 6A—North and South America (Except U.S.), (4) 6B—Europe, (5) 7A—Asia and Australia, (6) 7B—Africa and Physical Geography, (7) 8A—The United States (Commercial Geography), (8) 8B—The World (Commercial Geography).

Each book contains the part of the Syllabus on which the Drill Exercises are based. The exercises, which are exclusively objective are composed chiefly of statements with missing words or of statements in which the pupil has a choice of two or more answers. Adequate provision is made for map work. The exercises can be used as tests on the completion of a unit of work; when the exercises are accurately filled in, they constitute excellent material for review purposes. The authors, presumably in the interest of financial economy, recommend that the pupils copy the exercises so that the book can be used by other pupils. The pupil's time would be more efficiently employed if each pupil could indicate the answers directly in the book. Graded Drill Exercises should admirably serve the purpose for which they have been written.

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